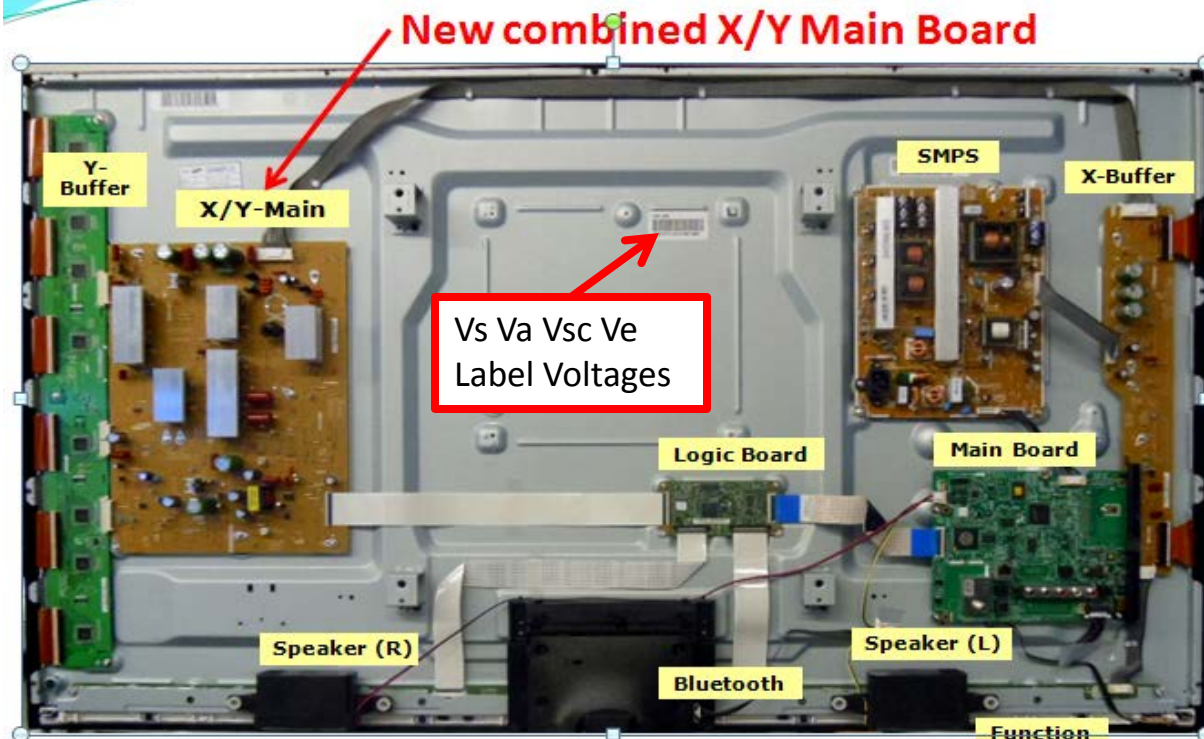




SERVICE BULLETINS

-None listed as of 5/29/12

Quick Parts: Verify before Ordering

Parts Category	Version	Parts No	Short Description
PCB	TD02	BN44-00509B	SMPS
PCB	TD02	BN94-04640B	Main PCB
PCB	TD02	BN96-21431C	RF module PCB
PCB	TD02	BN96-21529H	Function PCB
PCB	TD02	BN96-22085A	Logic Main PCB
PCB	TD02	BN96-22086A	Buffer E
PCB	TD02	BN96-22089A	Buffer F
PCB	TD02	BN96-22090A	X/Y Main Drive
PCB	TD02	BN96-22093A	Buffer X
PCB	TD02	BN96-22094A	Buffer Y
Display	TD02	BN96-22083A	Panel
Cosmetic	TD02	BN96-21670B	Speaker
Cosmetic	TD02	BN96-21989N	Front Cover
Cosmetic	TD02	BN96-21999J	Rear Cover
Cosmetic	TD02	BN96-22006A	Stand Base
Cosmetic	TD02	BN96-22009A	Stand Guide
Component	TD02	3903-000552	Power Cord
Component	TD02	BN96-13325F	LVDS Cable
Accessory	TD02	4301-000121	Battery
Accessory	TD02	BN63-02368B	Cleaning Cloth
Accessory	TD02	BN81-07013A	3D Glasses

HELP : 888-751-4086; 866-894-0637 FE)

GSPN

<http://gspn3.samsungcsportal.com>

PLUS ONE

<http://my.plus1solutions.net/clientPortals/samsung>

HOT TIPS

-New 2012 Model... always check for latest bulletins and firmware updates.

-New combined X/Y Main Board

FIRMWARE

5/25/12

PL51E490B4FXZP / PN51E490B4FXZA

T-MST9AUSC

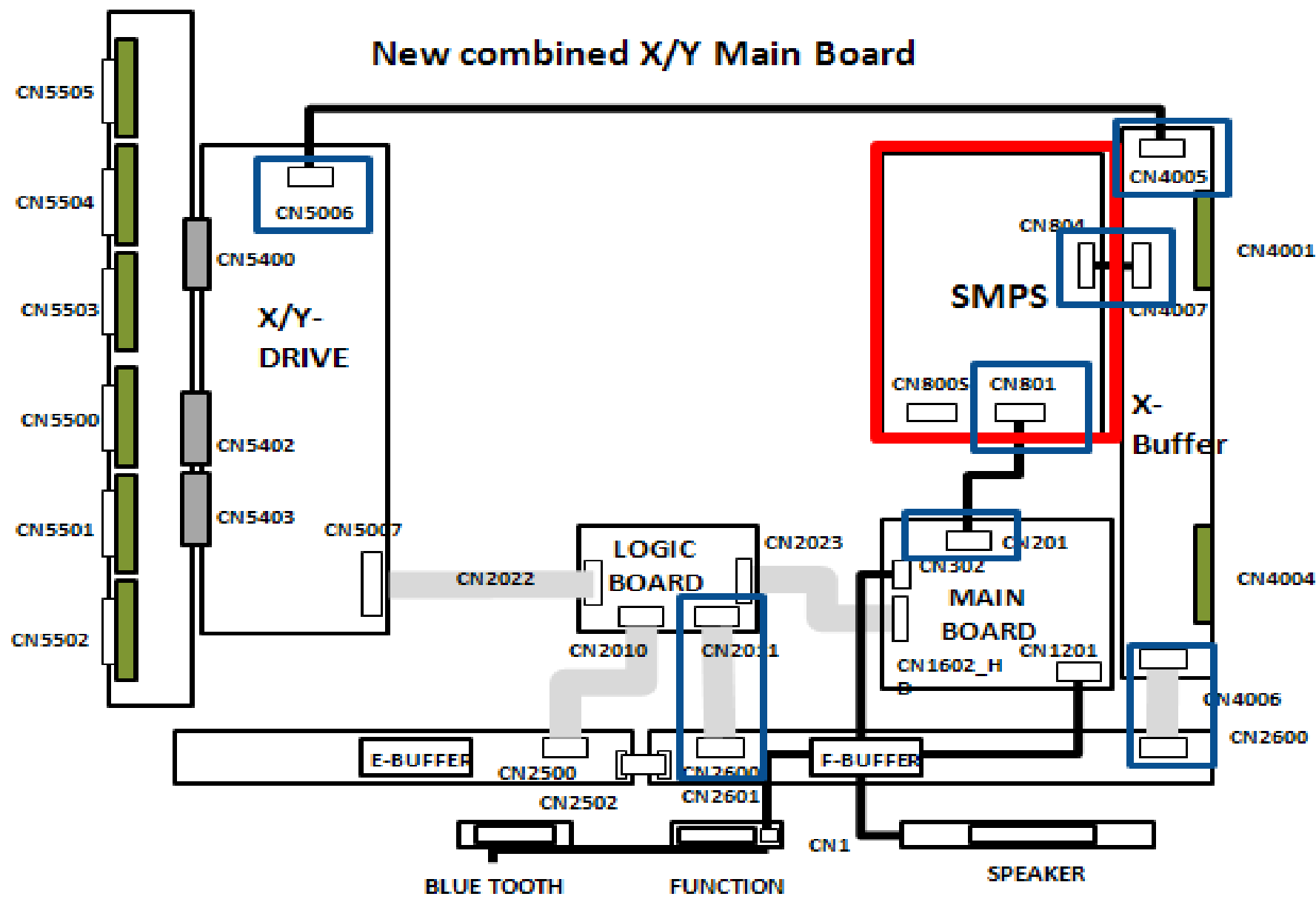
Version 1007.1

Avail on GSPN or Samsung,Com

Always check for latest updates



New combined X/Y Main Board



E490 Power On Sequence

SMPS (CN801) to/Fro Main Board (CN201)

CN801(SMPS) ↔ CN201(Main Board)

Pin No. (SMPS)	Signal(SMPS)
1	PS-ON (3.3V - 0V)
2	STBY (5.3V)
3	GND
4	D15V
5	GND
6	GND
7	D5.3V
8	D5.3V
9	GND
10	D15V
11	D15V
12	D5.3V

Power On Sequence (SMPS CN801):

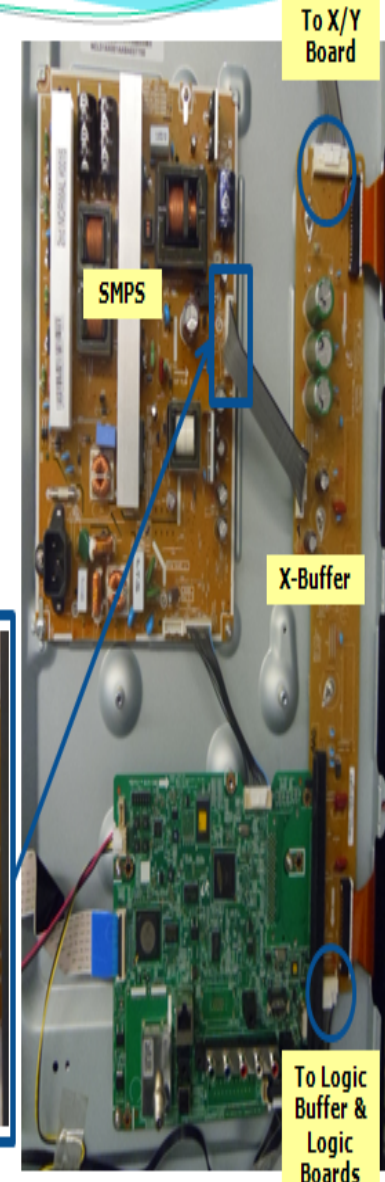
1. Standby Power : STBY (5.3V)
2. Power On: PS-ON (3.3V - 0V)
3. Low Voltages On: D15V, D5.3V



CN804(SMPS) ↔ CN4007(X Buffer Board)			
Pin No.(SMPS)	Signal(SMPS)	Pin No. (SMPS)	Signal (SMPS)
1	VS	7	D5.3V
2	VS	8	GND
3	N.C	9	VS_ON
4	VA	10	VS_CON
5	GND	11	PS_ON (3.3V - 0V)
6	D15V	12	GND

Power On Sequence Continued:

4. The PS ON signal, (3.3V- 0V) also at this connector, as it passes through the X- Buffer and the Logic Buffer Boards on its way to the Logic Board.
5. The VS_ON command returns from Logic Board turning on the VS & VA on the SMPS.
6. SMPS sends VS through X-Buffer Board to X/Y Main & VA through X-Buffer to the Logic Buffer Boards.



E490 Supply Adjustments

PNE490 Supply Adjustments "Vital Signs"

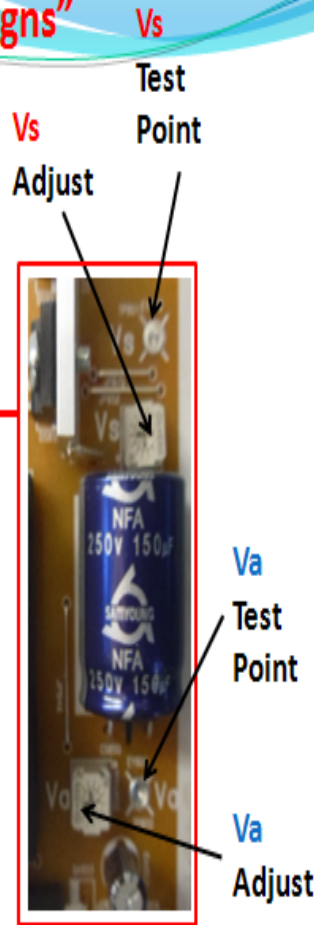
☐ NTSC	☒ NTSC/PAL		
Vs	Va	Vsc	Ve
203	58	-180	70

1. Record Readings
on PANEL LABEL

2. Go to SMPS
Power Board

3. Measure/Adjust
Vs Voltage

4. Measure/Adjust
Va Voltage



SMPS Adj.

☐ NTSC	☒ NTSC/PAL		
Vs	Va	Vsc	Ve
203	58	-180	70

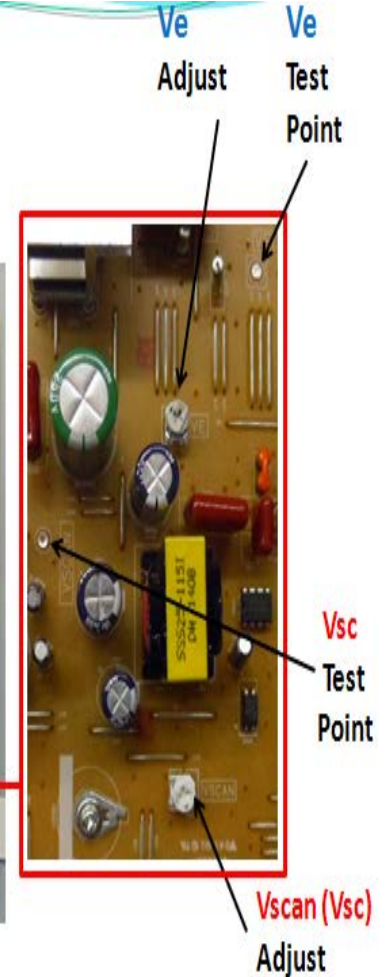
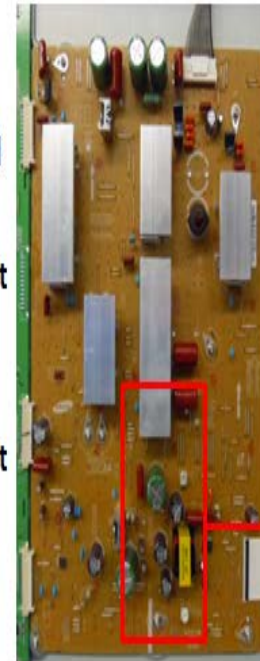
Panel Label

X/Y Main Board

5. Go to X/Y Board

6. Measure/Adjust
Ve Voltage

7. Measure/Adjust
Vsc Voltage

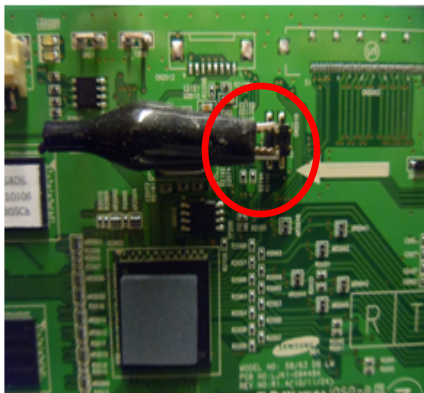


X/Y Main Adj.

Activating Power & Logic Board Test Patterns without Main Board:

1. Remove Power Cord to Panel
2. Short Highest 2 Pin #s on Logic Board Test Jig (Can be 4 Pin or 6 Pin)

3. Remove Power Connector at Main Board (keeping connection to SMPS)
4. Short "Power On" Pin to Circuit Ground on Power Connector to SMPS.
5. Connect Power Cord to Panel



Note: Some TVs may just have PC Pads instead of pins on Logic Test Jig. Simply connect to the 3 & 4 pads.

Power Supply Trouble Shooting Notes:

2010/2011/2012 models

Will not be run when the "X" or "Y" or "Y/X" Main are disconnected. The SMPS will shut down immediately. However if a meter is first connected to the test point when power is applied it will read the correct voltage briefly before shutting down.(You have enough time to check key voltages!)

CAUTION: Do not reconnect any connectors to SMPS or Y/X Board(s) until power has been turned off long enough for Vs to drop below 10V or damage will occur to X/ Y Board(s).

VITAL SIGNS check Vs, Va, Vsc & Ve

When troubleshooting, It's very important to first check **Vs, Va, Vsc & Ve**

If **Vs** is missing (0V), disconnect power and check for short. Use ohm meter to measure resistance while disconnecting Y/X-Board supply feed.

Turn Power On and Test SMPS with short connector removed for correct Vs voltage verification. (It may only come up briefly but to full level). Again be careful not to reconnect Power Connectors until Vs falls below 10V.

If **Va** is low or missing, disconnect Supply Feed to Logic Buffer Boards and check to see if SMPS Supply is restored. .

If **Vsc** is low or missing and Vs was OK, the failure is with the **Y/X-Board** since the Y-Board section generates the Vsc voltage from the Vs supplied by the SMPS.

If **Ve** is low or missing and Vs is OK, the failure is with the **Y/X-Board** since the Ve is generated by the X-Board section from the Vs supplied by the SMPS

Other SMPS Voltages:

Check Low Voltage feeds to the Main Board and other supplied Assemblies.

Over Current Protection

For the SMPS Power Supply... If a short circuit occurs on either the VS or VA voltage lines, the SMPS stops operating, but should not fail. When the short circuit is removed from the source line, the Power Supply will operate normally again. **Many SMPS Supplies are replaced needlessly!**

Function Control Troubleshooting

5 Directional Function Control

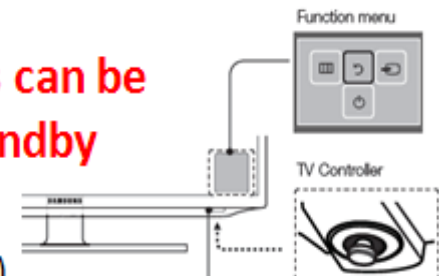
UNEH4000 Sample



CN702 (FUNCTION)			
1	IR	5	MSDA
2	GND	6	KEY1
3	A3.3V	7	KEY2
4	MSCL	8	GND

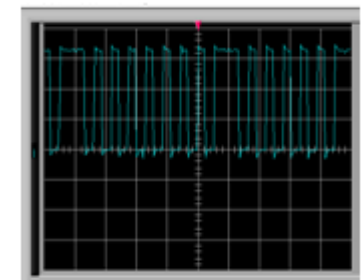
All Functions can be Tested in Standby Mode

(Standby Voltage)



Command	PIN	Signal	DC Voltage/Notes
IR	1	IR	3.3V to 2.5V DC with any Remote Control Commands
Press	6	Key 1	3.3V to 0.0V DC
Left	7	Key 2	3.3V to 1.6V DC
Right	7	Key 2	3.3V to 2.5V DC
Up	7	Key 2	3.3V to 0.0V DC
Down	7	Key 2	3.3V to 0.8V DC

Actual IR Signal



4V P-P Data

✓ Standby **A3.3V** on Function Connector, Pin 3.

✓ All Pins should read **3.3V** before commands.

✓ **Press**, at Key 1, Pin 6. 3.3V to 0.0V DC

✓ **Left, Right, Up, Down** at Key 2, Pin 7. Check **specific voltages** on chart.

TROUBLESHOOTING VIDEO PROBLEMS

1. Verify Video Operation:

- Customer Picture Test
- "Display"
- If display & Customer Picture Test are OK source is suspected
- Substitute with known good source and cabling.

2. Using Test Patterns in Service Mode:

Customer Remote

- Power off
- Mute, 182, Power

Factory Remote:

- Power On
- Info, Test

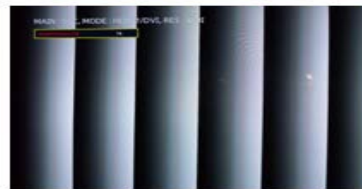
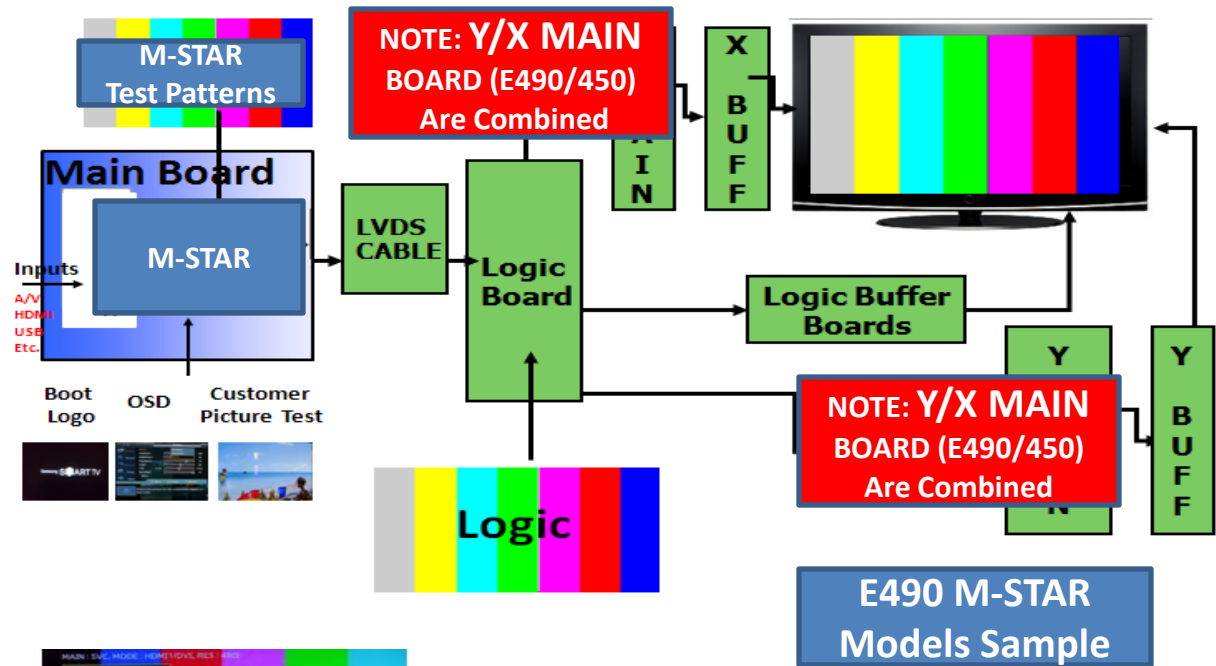
3. Verify M-STAR Patterns

4. Verify Logic Patterns

If Logic Patterns are OK and M-Star are noisy, replace the defective LVDS Cable or Main Board.

If M-Star and Logic Patterns are both noisy check for specific on screen noise error to determine failure. (next slide)

2012 PDP Signal Path for Troubleshooting



ON SCREEN FAILURE EXAMPLES:

NOTE: X/Y MAIN Combined.

"Y" Board Failure Examples

Notice how each error contains a horizontal line

These examples show Y board errors, because the Y electrodes run horizontally, errors can often be seen across the screen.

2010 & 2011 Y board errors will be detected by the Logic Board and often create a High Voltage Power Down ("VS ON" to Off) condition.

When failure exists on either the Y-Board or the Y-Buffer Boards, be sure to replace both assemblies. A failure on either Board can create a failure on both assemblies.

Y Buffer Boards Failures

Y-Buffer Failures will often show blown Scan ICs & will create either Panel Power Down

Or

On Screen Errors across the screen as shown in examples

Upper Y Buffer Error

Lower Y Buffer Error

Two Output Lines on Scan IC Are open or connector to Panel is open.

Bottom 2 Scan ICs affected. (12 ICs total = 1/6 of video)

"X" board Failure Examples

- In this left screen example, the sustain signal from the X board is low or missing.
- For 2009 Models and Older: Verify operation of the X board by disconnecting the power supply cable to the X board. If the other boards are working the picture will be dark.
- If the X-Board Power or Y-Board Power is removed, however, on 2010 or 2011 Models, an error will be detected and the VS Supply from the SMP3 will be turned off by the Logic Board. A Black Screen (on right) will occur.

"X" board Failure Examples

4-3 polar bar shadow

4-3 polar bar shadow

- In this example the Ve Initialize signal is low or missing creating image retention. No Erasing.
- Troubleshoot the X Board by verifying that the Ve Voltage is correct with the label on the Panel.

Logic Board Failure Examples

Screen vertical Noise Errors usually in Multiple Locations

The examples show the panel illuminated but displays with incorrect noisy video.

Logic Buffer Board Failure Examples

Normal Video Screen with added Vertical Black, Red, Green, or Blue Bar Errors

The examples show the panel illuminated, display is Normal except for area of Logic Buffer Board Failure.

Main Board Failure Symptoms

- Main Board errors are similar to logic errors but the problem can be on a single source such as the tuner.
- If the Menu also shows the defect the main board is suspected

PDP Panel Troubleshooting

Plasma Panel Failure Examples

- Plasma Panel failure can usually be identified by observation. Single sub pixel columns or rows that are black or white always are panel failures. Other lines or lines that vary with content are almost never panel failures. Individual pixel errors are almost always panel related.

ALIGNMENTS:

1. Check/Adj. VS, VA, VE, & VSC according to Panel Label and Diffusion test. (see bulletins for any special notes before making changes)



DIFFUSION TEST/ADJ. (cell miss-firing)

- Allow the unit to warm up 15 to 20 minutes
- Access the Burn Protect Sig. Pattern in Cust. Menu.
- Adjust the Vs volts until screen errors are gone in both dark and bright areas.
- Adjust the Vs volts within +/- 10V on the panel label.
- **NOTE: Diffusion may appear with aging panels.**
- **New panels with Diffusion consult bulletins and/or report problem.**

2. Check/Set Option Bytes:

Menu	Data
Factory Reset	-
Type	51 DHHcD
Local set	XX
Bagic Model	PE490
SVC Model	0
TUNER	XX
Ch table	NONE
Front Color	T-R-BLK